

## ABSTRACT

The invention relates to a communication system comprising a modulator, encoder, decoder, demodulator, and a data input source, which employs an improved modulation technique by effectively utilizing the conjugate signal space in Digital

5 Pulse Position Modulation (DPPM) format. This technique utilizes multiple the DPPM formats, whereby M data bits are conveyed by splitting them into sets of k bits. The split data are encoded to have forward and conjugate pulse positions for transmission over a transmission channel, which are discriminated and combined into a M-bit digital output. The system and method achieve superior characteristics in

10 terms of data rate, channel utilization and coding efficiency.